

Patent Claims

1. An internal combustion engine with an injection system that is configured as a high-pressure accumulator system, whereby at least one high-pressure pump is connected via a high-pressure supply line to a tubular high-pressure accumulator having connection fittings to which high-pressure lines are connected that serve to establish valve-controlled flow connections to injection valves that are used in the cylinder head of the internal combustion engine and that protrude into working areas formed by the cylinders, the pistons and the cylinder head, characterized in that the connection fittings (12a, 12b, 12c, 12d, 12e, 12f) are arranged laterally offset with respect to the appertaining injection valves and in that the absolute magnitude of the offset is the same for all of the injection valves of one cylinder row of the internal combustion engine.
2. The internal combustion engine according to Claim 1, characterized in that the offset for at least one cylinder at the end is positioned opposite to the orientation of the offset of for the other cylinders.
3. The internal combustion engine according to Claim 1 or Claim 2, characterized in that there are two differently shaped high-pressure lines (13a, 13b, 13c, 13d, 13e, 13f) for the cylinder row.
4. The internal combustion engine according to Claim 1 or Claim 2, characterized in that the high-pressure lines (13a, 13b, 13c, 13d, 13e, 13f) of one cylinder row are configured identically.
5. The internal combustion engine according to one of the preceding claims, characterized in that the at least one high-pressure pump (7) is arranged close to the cylinder head in a housing, preferably the crankcase of the internal combustion engine, and it is actuated by an injection pump cam that is arranged on the gas-exchange camshaft of the internal combustion engine.

6. The internal combustion engine according to Claim 5, characterized in that two high-pressure pumps (7a, 7b) that lie next to each other at a distance are associated with adjacent cylinders.
7. The internal combustion engine according to Claim 6, characterized in that the high-pressure supply lines (10a, 10b) are configured identically.
8. The internal combustion engine according to one of the preceding claims, characterized in that a control block (6) for controlling or regulating the fuel pressure to be established in the high-pressure accumulator (11) is arranged on the inlet side of the at least one high-pressure pump (7).
9. The internal combustion engine according to Claim 8, characterized in that the control block (6) is arranged next to the one high-pressure pump (7) or between the two high-pressure pumps (7a, 7b).
10. The internal combustion engine according to Claim 8, characterized in that the control block (6) is integrated into the support frame (3) of a fuel filter (4) arranged between a fuel delivery pump (1) and the at least one high-pressure pump (7).